

Please replace page 265 (Table XXIIIC) with the attached Substitute Sheet, page 265.

Please replace page 266 (Table XXIIID) with the attached Substitute Sheets, pages 266 and 266a.

Please replace page 267 (Table XXIVA) with the attached Substitute Sheet, page 267.

Please replace page 268 (Table XXIVB) with the attached Substitute Sheet, page 268.

Please replace page 269 (Table XXIVC) with the attached Substitute Sheet, page 269.

Please replace page 270 (Table XXIVD) with the attached Substitute Sheet, page 270.

Please insert the accompanying paper copy of the Sequence Listing, page numbers 1 to 914, at the end of the application.

REMARKS

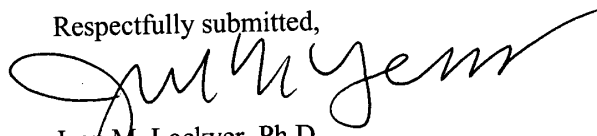
This amendment contains no new matter. Applicants note that the change in the number of pages for Table XXIIID is due to re-formatting.

This amendment is accompanied by a floppy disk containing the above named sequences, SEQ ID NOS:1-6899, in computer readable form, and a paper copy of the sequence information which has been printed from the floppy disk.

The information contained in the computer readable disk was prepared through the use of the software program "FastSEQ" and is identical to that of the paper copy.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-576-0200.

Respectfully submitted,



Jean M. Lockyer, Ph.D.  
Reg. No. 44,879

TOWNSEND and TOWNSEND and CREW LLP  
Two Embarcadero Center, 8<sup>th</sup> Floor  
San Francisco, California 94111-3834  
Tel: (415) 576-0200  
Fax: (415) 576-0300  
JML SF 1240357 v1

APPENDIX A

VERSION WITH MARKINGS TO SHOW CHANGES MADE

Amendment to the paragraph replaced at page 54, lines 16-25:

--In certain embodiments, the T helper peptide is one that is recognized by T helper cells present in the majority of the population. This can be accomplished by selecting amino acid sequences that bind to many, most, or all of the HLA class II molecules. These are known as "loosely HLA-restricted" or "promiscuous" T helper sequences. Examples of peptides that are promiscuous include sequences from antigens such as tetanus toxoid at positions 830-843 (QYIKANSKFIGITE; SEQ ID NO:6695), *Plasmodium falciparum* circumsporozoite (CS) protein at positions 378-398 (DIEKKIAKMEKASSVFNVVNS; SEQ ID NO:6696), and *Streptococcus* 18kD protein at positions 116 (GAVDSILGGVATYGAA; SEQ ID NO:6697). Other examples include peptides bearing a DR 1-4-7 supermotif, or either of the DR3 motifs.--

Amendment to the replaced paragraph at page 54, line 26 to page 55, line 3:

--Alternatively, it is possible to prepare synthetic peptides capable of stimulating T helper lymphocytes, in a loosely HLA-restricted fashion, using amino acid sequences not found in nature (see, e.g., PCT publication WO 95/07707). These synthetic compounds called Pan-DR-binding epitopes (e.g., PADRE™, Epimmune, Inc., San Diego, CA) are designed to most preferably bind most HLA-DR (human HLA class II) molecules. For instance, a pan-DR-binding epitope peptide having the formula: aKXVAAWTLKAAa (SEQ ID NO:6698), where "X" is either cyclohexylalanine, phenylalanine, or tyrosine, and "a" is either D-alanine or L-alanine, has been found to bind to most HLA-DR alleles, and to stimulate the response of T helper lymphocytes from most individuals, regardless of their HLA type. An alternative of a pan-DR binding epitope comprises all "L" natural amino acids and can be provided in the form of nucleic acids that encode the epitope.—

Table IV: HLA Class I Standard Peptide Binding Affinity.

| ALLELE | STANDARD<br>PEPTIDE | SEQUENCE<br>(SEQ ID NO:) | STANDARD<br>BINDING AFFINITY<br>(nM) | SEQ ID<br>NO: |
|--------|---------------------|--------------------------|--------------------------------------|---------------|
| A*0101 | 944.02              | YLEPAIAKY                | 25                                   | 6699          |
| A*0201 | 941.01              | FLPSDYFPSV               | 5.0                                  | 6700          |
| A*0202 | 941.01              | FLPSDYFPSV               | 4.3                                  | 6700          |
| A*0203 | 941.01              | FLPSDYFPSV               | 10                                   | 6700          |
| A*0205 | 941.01              | FLPSDYFPSV               | 4.3                                  | 6700          |
| A*0206 | 941.01              | FLPSDYFPSV               | 3.7                                  | 6700          |
| A*0207 | 941.01              | FLPSDYFPSV               | 23                                   | 6700          |
| A*6802 | 1072.34             | YVIKVSARV                | 8.0                                  | 6701          |
| A*0301 | 941.12              | KVFPYALINK               | 11                                   | 6702          |
| A*1101 | 940.06              | AVDLYHFLK                | 6.0                                  | 6703          |
| A*3101 | 941.12              | KVFPYALINK               | 18                                   | 6704          |
| A*3301 | 1083.02             | STLPETYVRR               | 29                                   | 6704          |
| A*6801 | 941.12              | KVFPYALINK               | 8.0                                  | 6702          |
| A*2402 | 979.02              | AYIDNYNKF                | 12                                   | 6705          |
| B*0702 | 1075.23             | APRTLVL                  | 5.5                                  | 6706          |
| B*3501 | 1021.05             | FPFKYAAAF                | 7.2                                  | 6707          |
| B51    | 1021.05             | FPFKYAAAF                | 5.5                                  | 6707          |
| B*5301 | 1021.05             | FPFKYAAAF                | 9.3                                  | 6707          |
| B*5401 | 1021.05             | FPFKYAAAF                | 10                                   | 6707          |

Table V. HLA Class II Standard Peptide Binding Affinity.

| Allele    | Nomenclature    | Standard Peptide | Sequence (SEQ ID NO:)        | Binding Affinity (nM) |
|-----------|-----------------|------------------|------------------------------|-----------------------|
| DRB1*0101 | DR1             | 515.01           | PKYVKQNTLKLAT                | 5.0                   |
| DRB1*0301 | DR3             | 829.02           | YKTIAFDEEARR                 | 300                   |
| DRB1*0401 | DR4w4           | 515.01           | PKYVKQNTLKLAT                | 45                    |
| DRB1*0404 | DR4w14          | 717.01           | YARFQSQTTLKQKT               | 50                    |
| DRB1*0405 | DR4w15          | 717.01           | YARFQSQTTLKQKT               | 38                    |
| DRB1*0701 | DR7             | 553.01           | QYIKANSKFIGITE               | 25                    |
| DRB1*0802 | DR8w2           | 553.01           | QYIKANSKFIGITE               | 49                    |
| DRB1*0803 | DR8w3           | 553.01           | QYIKANSKFIGITE               | 1600                  |
| DRB1*0901 | DR9             | 553.01           | QYIKANSKFIGITE               | 75                    |
| DRB1*1101 | DR5w11          | 553.01           | QYIKANSKFIGITE               | 20                    |
| DRB1*1201 | DR5w12          | 1200.05          | EALIHQLKINPYVLS              | 298                   |
| DRB1*1302 | DR6w19          | 650.22           | QYIKANAKFIGITE               | 3.5                   |
| DRB1*1501 | DR2w2 $\beta$ 1 | 507.02           | GRTQDENPVVHFFKNIV<br>TPRTPPP | 9.1                   |
| DRB3*0101 | DR52a           | 511              | NGQIGNDPNRDIL                | 470                   |
| DRB4*0101 | DRw53           | 717.01           | YARFQSQTTLKQKT               | 58                    |
| DRB5*0101 | DR2w2 $\beta$ 2 | 553.01           | QYIKANSKFIGITE               | 20                    |

SEQ  
 ID  
 NO:  
 6708  
 6709  
 6708  
 6710  
 6710  
 6711  
 6711  
 6711  
 6711  
 6711  
 6712  
 6713  
 6714  
 6715  
 6710  
 6711

Table XXII. Prostate Antigen Peptides

| Antigen<br>Binding affinity<br>$\leq 200\text{nM}$ | Sequence    | SEQ ID<br>NO:<br><u>6870</u>    |
|----------------------------------------------------|-------------|---------------------------------|
| PSA.117                                            | LMLRLSEPA   | ↓                               |
| PSA.118                                            | MLLRLSEPAEL |                                 |
| PSA.118                                            | MLLRLSEPA   |                                 |
| PSA.143                                            | ALGTTCYA    |                                 |
| PSA.161                                            | FLTPKKLQCV  |                                 |
| PSA.166                                            | KLQCVDLHV   |                                 |
| PAP.6                                              | LLLARAASLSL | <u>6875</u><br>↓<br><u>6876</u> |
| PAP.21                                             | LLFFWLDRSV  | ↓                               |
| PAP.30                                             | VLAKELKFV   |                                 |
| PAP.92                                             | FLNESYKHEQV |                                 |
| PAP.112                                            | TLMSAMTNL   |                                 |
| PAP.135                                            | ILLWQPIPV   |                                 |
| PAP.284                                            | IMYSAHDTTV  |                                 |
| PAP.299                                            | ALDVYNGLL   |                                 |
| PSM.26                                             | LVLAGGFFL   | <u>6883</u><br>↓<br><u>6884</u> |
| PSM.27                                             | VLAGGFFLL   | ↓                               |
| PSM.168                                            | GMPEGDLVYV  |                                 |
| PSM.288                                            | GLPSIPVHPI  |                                 |
| PSM.441                                            | LLQERGVAYI  |                                 |
| PSM.469                                            | LMYSLVHNL   |                                 |
| PSM.662                                            | RMMNDQLMFL  |                                 |
| PSM.663                                            | MMNDQLMFL   |                                 |
| PSM.667                                            | QLMFLERAFI  |                                 |
| PSM.711                                            | ALFDIESKV   |                                 |
| HuK2.165                                           | FLRPRSLQCV  | <u>6893</u><br>↓<br><u>6894</u> |
| HuK2.175                                           | SLHLLSNDMCA | <u>6895</u>                     |
| Binding affinity<br>$>200\text{nM}$                | Sequence    |                                 |
| PSM.4                                              | LLHETDSAV   | <u>6896</u><br>↓                |
| PSM.25                                             | ALVLAGGFFL  | ↓<br><u>6899</u>                |
| PSM.427                                            | GLLGSTEW    |                                 |
| PSM.514                                            | KLGSGNDFEV  |                                 |

Table XXIIIA A2 supermotif cross-reactive binding data

| Peptide  | AA | Sequence    | Source      | A*0201<br>nM | A*0202<br>nM | A*0203<br>nM | A*0206<br>nM | A*6802<br>nM | A2 Cross-<br>Reactivity |
|----------|----|-------------|-------------|--------------|--------------|--------------|--------------|--------------|-------------------------|
| 20.0044  | 9  | LLARAAASL   | PAP.6       | 208          | 13           | 29           | 425          | --           | 4                       |
| 63.0136  | 11 | LLARAAASLSL | PAP.6       | 8.1          | 3.1          | 5.3          | 80           | 143          | 5                       |
| 60.0201  | 9  | LLARAAASV   | PAP.6.V9    | 18           | 215          | 6.7          | 95           | --           | 4                       |
| 20.0203  | 10 | LLARAAASLSL | PAP.7       | 500          | 5.2          | 63           | 9250         | 5714         | 3                       |
| 63.0031  | 10 | LLARAAASLSV | PAP.7.V10   | 109          | 10           | 21           | 378          | 727          | 4                       |
| 63.0137  | 11 | AASLSLGLFL  | PAP.11      | 227          | 23           | 53           | 95           | --           | 4                       |
| 1419.51  | 10 | SLSLGLFLLL  | PAP.13      | 40           | 13           | 403          | 21           | 8560         | 4                       |
| 1419.52  | 10 | SLSLGLFLV   | PAP.13.V10  | 1.8          | 3.9          | 17           | 42           | 355          | 5                       |
| 1419.50  | 9  | SLSLGLFLV   | PAP.13.V9   | 77           | 25           | 21           | 93           | --           | 4                       |
| 60.0203  | 9  | FLFLFFVW    | PAP.18.V9   | 42           | 307          | 625          | 308          | 90           | 4                       |
| 63.0138  | 11 | FLFFWLDRSV  | PAP.20      | 14           | 17           | 2.8          | 285          | 364          | 5                       |
| 1097.09  | 10 | LLFFWLDRSV  | PAP.21      | 28           | 0.60         | 1.6          | 231          | --           | 4                       |
| 1418.23  | 10 | LTFWLDRSV   | PAP.21.T2   | 118          | 11           | 9.6          | 43           | 16           | 5                       |
| 63.0139  | 11 | LLFFWLDRSVL | PAP.21      | 65           | 2.9          | 2.7          | 822          | 4444         | 3                       |
| 63.0033  | 10 | SLAKELKFV   | PAP.29.L2   | 64           | 5.7          | 3.8          | 38           | 6667         | 4                       |
| 1097.171 | 9  | VLAKELKFV   | PAP.30      | 96           | 3.6          | 6.7          | 168          | --           | 4                       |
| 63.0142  | 11 | VLAKELKFVTL | PAP.30      | 6.9          | 8.1          | 21           | 25           | --           | 4                       |
| 63.0034  | 10 | VLAKELKFV   | PAP.30.V10  | 31           | 12           | 189          | 86           | 2286         | 4                       |
| 1419.55  | 11 | FLNESYKHEQV | PAP.92      | 29           | 1.4          | 5.6          | 381          | 6154         | 4                       |
| 1177.01  | 9  | TLMSAMTNL   | PAP.112     | 43           | 0.80         | 2.9          | 285          | 296          | 5                       |
| 20.0312  | 10 | TLMSAMTNLA  | PAP.112     | 385          | 3.6          | 37           | 3700         | 6667         | 3                       |
| 63.0037  | 10 | TLMSAMTNLV  | PAP.112.V10 | 63           | 3.9          | 12           | 43           | 242          | 5                       |
| 1419.56  | 9  | TLMSAMTNV   | PAP.112.V9  | 10           | 2.4          | 3.6          | 54           | 62           | 5                       |
| 1419.58  | 10 | LLALFPPEGV  | PAP.120.L2  | 5.0          | 0.70         | 1.6          | 148          | 163          | 5                       |
| 1419.59  | 10 | LVALFPPEGV  | PAP.120.V2  | 156          | 17           | 4.8          | 463          | 28           | 5                       |
| 1419.6   | 10 | ALFPPEGVSI  | PAP.122     | 278          | 11           | 133          | 2643         | --           | 3                       |

-- indicates binding affinity &gt;10,000nM.

Table XXIII A A2 supermotif cross-reactive binding data

| Peptide      | AA | Sequence   | Source      | A*0201<br>nM | A*0202<br>nM | A*0203<br>nM | A*0206<br>nM | A*6802<br>nM | A2 Cross-<br>Reactivity |
|--------------|----|------------|-------------|--------------|--------------|--------------|--------------|--------------|-------------------------|
| 6741 1419.61 | 10 | ALFPEGVSV  | PAP.122.V10 | 15           | 1.0          | 18           | 119          | 4444         | 4                       |
| 6742 63.0041 | 10 | GVSINPILV  | PAP.128.V10 | 250          | 94           | 23           | 451          | 2286         | 4                       |
| 6743 60.0207 | 9  | GVSINPIV   | PAP.128.V9  | 455          | 269          | 909          | 308          | --           | 3                       |
| 6744 63.0042 | 10 | PLLLWQPIV  | PAP.134.L2  | 238          | 47           | 19           | 336          | 3333         | 4                       |
| 6745 1044.04 | 9  | ILLWQPIV   | PAP.135     | 3.3          | 39           | 1.8          | 71           | 1702         | 4                       |
| 6746 1418.25 | 9  | ITLWQPIV   | PAP.135.T2  | 34           | 1720         | 6.2          | 26           | 32           | 4                       |
| 6747 1419.69 | 10 | LLWQPIVHV  | PAP.136.V10 | 25           | 1.8          | 17           | 287          | 60           | 5                       |
| 6748 1166.11 | 10 | GLHGQDLFGI | PAP.196     | 26           | 0.90         | 2.5          | 315          | --           | 4                       |
| 6749 1419.62 | 10 | GLHGQDLFGV | PAP.196.V10 | 12           | 2.3          | 3.1          | 18           | --           | 4                       |
| 6750 63.0048 | 10 | KLRELSV    | PAP.234.V10 | 263          | 9.1          | 7.1          | 49           | 1818         | 4                       |
| 6751 1097.05 | 10 | IMYSAHDTTV | PAP.284     | 217          | 1.5          | 14           | 411          | --           | 4                       |
| 6752 1389.06 | 10 | ILYSAHDTTV | PAP.284.L2  | 385          | 1.0          | 15           | 1480         | 5714         | 3                       |
| 6753 60.0213 | 9  | TVSGLQMAV  | PAP.292.V9  | 294          | 12           | 122          | 195          | 5.7          | 5                       |
| 6754 1177.02 | 9  | ALDVYNGLL  | PAP.299     | 73           | 29           | 256          | 3083         | --           | 3                       |
| 6755 1419.64 | 10 | LLPPYASCHV | PAP.306.V10 | 88           | 15           | 16           | 98           | 5260         | 4                       |

-- indicates binding affinity &gt;10,000nM.

Table XXIIIB A2 supermotif cross-reactive binding data

| Peptide | AA | Sequence   | Source      | A*0201<br>nM | A*0202<br>nM | A*0203<br>nM | A*0206<br>nM | A*6802<br>nM | A2 Cross-<br>Reactivity |
|---------|----|------------|-------------|--------------|--------------|--------------|--------------|--------------|-------------------------|
| 1126.10 | 9  | VLGGFFLL   | PSM.27      | 39           | 0.20         | 33           | 31           | 2857         | 4                       |
| 1389.20 | 9  | VLGGFFLV   | PSM.27.V9   | 26           | 0.40         | 5.0          | 57           | 216          | 5                       |
| 1129.04 | 10 | GMPEGDLVYV | PSM.168     | 55           | 3.1          | 7.1          | 161          | 6154         | 4                       |
| 1389.22 | 10 | GLPEGDLVYV | PSM.168.L2  | 42           | 2.0          | 2.1          | 112          | 964          | 4                       |
| 1418.29 | 10 | GTPEGDLVYV | PSM.168.T2  | 313          | 134          | 53           | 40           | 571          | 4                       |
| 1129.10 | 10 | GLPSIPVHPI | PSM.288     | 147          | 2.7          | 2.1          | 2467         | 308          | 4                       |
| 1389.24 | 10 | GLPSIPVHPV | PSM.288.V10 | 55           | 0.70         | 0.60         | 308          | 121          | 5                       |
| 1129.01 | 10 | LLQERGVAYI | PSM.441     | 179          | 5.7          | 6.7          | 861          | --           | 3                       |
| 1126.14 | 9  | LMYSLVHNL  | PSM.469     | 64           | 0.40         | 2.1          | 109          | 320          | 5                       |
| 1126.06 | 10 | RMNDQLMFL  | PSM.662     | 9.8          | 2.7          | 7.7          | 40           | --           | 4                       |
| 1126.01 | 9  | MMNDQLMFL  | PSM.663     | 11           | 0.80         | 1.7          | 7.6          | 195          | 5                       |
| 1126.16 | 10 | QLMFLERAFI | PSM.667     | 98           | 36           | 91           | --           | 30           | 4                       |
| 1129.08 | 9  | ALFDIESKV  | PSM.711     | 85           | 0.70         | 1.4          | 148          | 8889         | 4                       |
| 1418.30 | 9  | ATFDIESKV  | PSM.711.T2  | 238          | 27           | 44           | 82           | 258          | 5                       |

-- indicates binding affinity &gt;10,000nM.



Table XXIII C A2 supermotif cross-reactive binding data

| Peptide           | AA | Sequence    | Source      | Alternate Source | A*0201 nM | A*0202 nM | A*0203 nM | A*0206 nM | A*6802 nM | A2 Cross-Reactivity |
|-------------------|----|-------------|-------------|------------------|-----------|-----------|-----------|-----------|-----------|---------------------|
| 52450<br>No. 6771 | 11 | VVFLTLSTWI  | PSA.1       |                  | 385       | 159       | 63        | 2846      | --        | 3                   |
|                   | 11 | VVFLTLSTWV  | PSA.1.V11   |                  | 89        | 88        | 71        | 336       | --        | 4                   |
|                   | 11 | FLTLSTWIGV  | PSA.3.V11   |                  | 6.8       | 3.0       | 18        | 65        | 114       | 5                   |
|                   | 9  | FLTLSTWV    | PSA.3.V9    |                  | 53        | 8.4       | 8.3       | 49        | --        | 4                   |
|                   | 9  | TLSTWIGV    | PSA.5.V9    |                  | 26        | 4.9       | 40        | 712       | 229       | 4                   |
|                   | 11 | VLVHPQWVLT  | PSA.49      | HuK2.53          | 294       | 7.7       | 101       | 2056      | --        | 3                   |
|                   | 11 | VLVHPQWVLT  | PSA.49.V11  | HuK2.53.V11      | 11        | 1.5       | 16        | 31        | 8889      | 4                   |
|                   | 11 | DLMLRLSEPV  | PSA.116.V11 | HuK2.120.V11     | 50        | 57        | 29        | 148       | 2759      | 4                   |
|                   | 10 | LMLRLSEPA   | PSA.117     | HuK2.121         | 200       | 17        | 67        | 925       | 5000      | 3                   |
|                   | 10 | LMLRLSEPV   | PSA.117.V10 | HuK2.121.V10     | 114       | 67        | 29        | 25        | 6154      | 4                   |
|                   | 9  | MLRLSEPA    | PSA.118     | HuK2.122         | 195       | 745       | 145       | 49        | --        | 3                   |
|                   | 9  | MLRLSEPV    | PSA.118.V9  | HuK2.122.V9      | 36        | 36        | 46        | 638       | 421       | 4                   |
|                   | 11 | MLRLSEPAEV  | PSA.118.V11 |                  | 294       | 331       | 115       | 1762      | 4444      | 3                   |
|                   | 8  | ALGTTCYA    | PSA.143     | HuK2.147         | 15        | 19        | 13        | 561       | --        | 3                   |
|                   | 8  | ALGTTCYV    | PSA.143.V8  | HuK2.147.V8      | 74        | 6.4       | 12        | 264       | --        | 4                   |
|                   | 10 | FLTPKKLQCV  | PSA.161     |                  | 52        | 8.3       | 13        | 755       | --        | 3                   |
|                   | 9  | KLQCVDLHV   | PSA.166     |                  | 79        | 205       | 91        | 6167      | --        | 3                   |
|                   | 10 | KLQCVDLHVV  | PSA.166.V10 |                  | 13        | 84        | 9.1       | 500       | --        | 4                   |
|                   | 9  | KVTKFMLCV   | PSA.187.V9  |                  | 69        | 518       | 53        | 128       | --        | 3                   |
|                   | 11 | PLVCNGVLQGV | PSA.212.V11 | HuK2.216.V11     | 27        | 127       | 19        | 255       | 4314      | 4                   |
|                   | 10 | LVCNGVLQGV  | PSA.213.V10 | HuK2.217.V10     | 10        | 2.9       | 12        | 5.6       | 3.5       | 5                   |

-- indicates binding affinity &gt;10,000nM.

Table XXIIID A2 supermotif cross-reactive binding data

| Peptide | AA | Sequence    | Source       | Alternate Source | A*0201 nM | A*0202 nM | A*0203 nM | A*0206 nM | A*6802 nM | A2 Cross-Reactivity |
|---------|----|-------------|--------------|------------------|-----------|-----------|-----------|-----------|-----------|---------------------|
| 1418.13 | 9  | LLLSIALSV   | HuK2.4.L2    |                  | 88        | 176       | 147       | 189       | --        | 4                   |
| 1418.57 | 11 | ILLSVGCTGAV | HuK2.8.L2    |                  | 36        | 33        | 36        | 308       | --        | 4                   |
| 1418.59 | 11 | ITLSVGCTGAV | HuK2.8.T2    |                  | 294       | 134       | 40        | 206       | 121       | 5                   |
| 1419.05 | 10 | ALSVGCTGAV  | HuK2.9       |                  | 53        | 75        | 17        | 542       | --        | 3                   |
| 1418.15 | 9  | ALSVGCTGV   | HuK2.9.V9    |                  | 24        | 17        | 9.1       | 264       | --        | 4                   |
| 1418.35 | 10 | SVGCTGAVPV  | HuK2.11.V10  |                  | 104       | 287       | 154       | 552       | 216       | 4                   |
| 1419.10 | 11 | VLVHPQWVLT  | HuK2.53      | PSA.49           | 294       | 7.7       | 101       | 2056      | --        | 3                   |
| 1419.11 | 11 | VLVHPQWVLT  | HuK2.53.V11  | PSA.49.V11       | 11        | 1.6       | 16        | 31        | 9378      | 4                   |
| 63.0109 | 11 | DLMLRLSEPV  | HuK2.120.V11 | PSA.116.V11      | 50        | 57        | 29        | 148       | 2759      | 4                   |
| 63.0014 | 10 | LMLLRLSEPA  | HuK2.121     | PSA.117          | 200       | 17        | 67        | 925       | 5000      | 3                   |
| 1418.43 | 10 | LMLLRLSEPV  | HuK2.121.V10 | PSA.117.V10      | 114       | 67        | 29        | 25        | 6154      | 4                   |
| 1419.02 | 9  | MLLRLSEPA   | HuK2.122     | PSA.118          | 195       | 745       | 145       | 49        | --        | 3                   |
| 1389.10 | 9  | MLLRLSEPV   | HuK2.122.V9  | PSA.118.V9       | 36        | 36        | 46        | 638       | 421       | 4                   |
| 1419.01 | 8  | ALGTTTCYA   | HuK2.147     | PSA.143          | 15        | 19        | 13        | 561       | --        | 3                   |
| 1389.14 | 8  | ALGTTTCYV   | HuK2.147.V8  | PSA.143.V8       | 74        | 6.4       | 12        | 264       | --        | 4                   |
| 1419.07 | 10 | FLRPSLQCV   | HuK2.165     |                  | 186       | 4.8       | 4.2       | --        | --        | 3                   |
| 60.0191 | 9  | SLQCVSLHL   | HuK2.170     |                  | 500       | 51        | 417       | 6167      | 2581      | 3                   |
| 1419.66 | 10 | SLQCVSLHLL  | HuK2.170     |                  | 263       | 4.9       | 71        | 446       | 5000      | 4                   |
| 1418.52 | 10 | SLQCVSLHLV  | HuK2.170.V10 |                  | 13        | 6.3       | 2.8       | 5.2       | 205       | 5                   |
| 1418.19 | 9  | SLQCVSLHV   | HuK2.170.V9  |                  | 56        | 165       | 48        | 4111      | 1600      | 3                   |
| 1419.14 | 11 | SLHLLSNDMCA | HuK2.175     |                  | 71        | 4.8       | 71        | --        | --        | 3                   |
| 1418.66 | 11 | SLHLLSNDMCV | HuK2.175.V11 |                  | 8.6       | 0.80      | 10        | 2313      | 2162      | 3                   |
| 1419.15 | 11 | HLLSNDMCARA | HuK2.177     |                  | 417       | 391       | 250       | 374       | --        | 4                   |
| 1418.67 | 11 | HLLSNDMCARV | HuK2.177.V11 |                  | 26        | 1.3       | 5.3       | 37        | 860       | 4                   |
| 1418.20 | 9  | HLLSNDMCV   | HuK2.177.V9  |                  | 119       | 102       | 278       | 176       | --        | 4                   |
| 1418.53 | 10 | LJSNDMCARV  | HuK2.178.V10 |                  | 5.3       | 0.70      | 4.3       | 10        | 1702      | 4                   |
| 1418.71 | 11 | KVTFEMLCAGV | HuK2.191.V11 |                  | 56        | 10        | 26        | 29        | 143       | 5                   |
| 1418.21 | 9  | KVTFEMLCV   | HuK2.191.V9  |                  | 53        | 27        | 31        | 34        | 6667      | 4                   |
| 1418.22 | 9  | FMLCAGLVV   | HuK2.195.V9  |                  | 29        | 12        | 91        | 51        | --        | 4                   |
| 1419.17 | 11 | PLVCGVLQGV  | HuK2.216.V11 | PSA.212.V11      | 27        | 127       | 19        | 255       | 4314      | 4                   |
| 1418.55 | 10 | LVCNGVLQGV  | HuK2.217.V10 | PSA.213.V11      | 10        | 2.9       | 12        | 5.6       | 3.5       | 5                   |

-- indicates binding affinity > 10,000nM.

Seq ID:  
6792

6872

Table XXIVA Immunogenicity of A2 cross-reactive binding peptides and peptide analogs

| Peptide ID | AA | Sequence   | Source      | A*0201<br>nM | A*0202<br>nM | A*0203<br>nM | A*0206<br>nM | A*6802<br>nM | Cross-<br>Reactivity<br>( $\leq 200$ nM) | A2<br>peptide | A2<br>native | A2<br>in vivo |
|------------|----|------------|-------------|--------------|--------------|--------------|--------------|--------------|------------------------------------------|---------------|--------------|---------------|
| 1419.51    | 10 | SLSGLFLFL  | PAP.13      | 40           | 13           | 403          | 21           | 8560         | 3                                        |               |              |               |
| 1419.52    | 10 | SLSGLFLFLV | PAP.13.V10  | 1.8          | 3.9          | 17           | 42           | 355          | 4                                        |               |              |               |
| 1097.09    | 10 | LLFFWLDRSV | PAP.21      | 28           | 0.60         | 1.6          | 231          | --           | 3                                        | 3/3           |              | 0/3           |
| 1418.23    | 10 | LTFFWLDRSV | PAP.21.T2   | 118          | 11           | 9.6          | 43           | 16           | 5                                        | 3/3           | 2/3          |               |
| 1097.17    | 9  | VLAKELKFV  | PAP.30      | 96           | 3.6          | 6.7          | 168          | --           | 4                                        | 1/3           |              | 0/3           |
| 1177.01    | 9  | TLMSAMTNL  | PAP.112     | 43           | 0.80         | 2.9          | 285          | 296          | 3                                        | 2/2           |              | 3/3           |
| 1419.58    | 10 | LLALFPPEGV | PAP.120.L2  | 5.0          | 0.72         | 1.6          | 146          | 164          | 5                                        |               |              |               |
| 1419.61    | 10 | ALFPPEGVSV | PAP.122.V10 | 15           | 1.0          | 18           | 120          | 4387         | 4                                        | 1/3           | 1/3          |               |
| 1044.04    | 9  | ILLWQPIPV  | PAP.135     | 3.3          | 39           | 1.8          | 71           | 8511         | 4                                        | 5/5           |              | 1/6           |
| 1418.25    | 9  | ITLWQPIPV  | PAP.135.T2  | 34           | 1723         | 6.2          | 26           | 32           | 4                                        | 3/3           | 2/3          |               |
| 1419.69    | 10 | LLWQPIPVHV | PAP.136.V10 | 25           | 1.8          | 17           | 287          | 60           | 4                                        |               |              |               |
| 1166.11    | 10 | GLHGQDLFGI | PAP.196     | 26           | 0.9          | 2.5          | 315          | --           | 3                                        |               |              |               |
| 1419.62    | 10 | GLHGQDLFGV | PAP.196.V10 | 12           | 2.3          | 3.2          | 18           | --           | 4                                        |               |              |               |
| 1097.05    | 10 | IMYSAHDTTV | PAP.284     | 217          | 1.5          | 14           | 411          | --           | 2                                        | 3/3           |              | 0/3           |
| 1419.64    | 10 | LLPPYASCHV | PAP.306.V10 | 88           | 15           | 16           | 98           | 5260         | 4                                        |               |              |               |

SEQ ID  
no.:  
683

683

Table XXIVB Immunogenicity of A2 cross-reactive binding peptide and peptide analogs

| Peptide ID | AA | Sequence   | Source      | A*0201<br>nM | A*0202<br>nM | A*0203<br>nM | A*0206<br>nM | A*6802<br>nM | Cross-<br>Reactivity<br>( $\leq 200$ nM) | A2<br>peptide | A2<br>native | A2<br>in vivo |
|------------|----|------------|-------------|--------------|--------------|--------------|--------------|--------------|------------------------------------------|---------------|--------------|---------------|
| 1126.10    | 9  | VLGGFFLL   | PSM.27      | 39           | 0.20         | 33           | 31           | --           | 4                                        | 1/2           |              | 3/3           |
| 1389.20    | 9  | VLGGFFLV   | PSM.27.V9   | 26           | 0.40         | 5.0          | 57           | 216          | 4                                        | 1/2           | 1/2          |               |
| 1129.04    | 10 | GMPEGDLVYV | PSM.168     | 55           | 3.1          | 7.1          | 161          | --           | 4                                        | 0/1           |              | 1/3           |
| 1129.10    | 10 | GLPSIPVHPI | PSM.288     | 147          | 2.7          | 2.1          | 2467         | 1538         | 3                                        | 2/4           |              | 0/3           |
| 1389.24    | 10 | GLPSIPVHPV | PSM.288.V10 | 55           | 0.70         | 0.60         | 308          | 121          | 4                                        | 4/4           | 3/4          |               |
| 1129.01    | 10 | LLQERGVAYI | PSM.441     | 179          | 5.7          | 6.7          | 861          | --           | 3                                        | 3/3           |              |               |
| 1126.14    | 9  | LMYSLVHNL  | PSM.469     | 64           | 0.40         | 2.1          | 109          | 1600         | 4                                        | 3/3           |              | 3/3           |
| 1126.06    | 10 | RMMNDQLMFL | PSM.662     | 9.8          | 2.7          | 7.7          | 40           | --           | 4                                        | 1/1           |              | 20/22         |
| 1126.01    | 9  | MMNDQLMFL  | PSM.663     | 11           | 0.80         | 1.7          | 7.6          | 976          | 4                                        | 2/2           |              | 3/3           |
| 1129.08    | 9  | ALFDIESKV  | PSM.711     | 85           | 0.70         | 1.4          | 148          | --           | 4                                        | 2/2           |              | 3/3           |

Seq ID

WD.

6838

6847

Table XXIVC Immunogenicity of A2 cross-reactive binding peptides and peptide analogs

| Peptide ID       | AA | Sequence     | Source      | Alternate Source | A*0201 nM | A*0202 nM | A*0203 nM | A*0206 nM | A*6802 nM | Cross- Reactivity (<200nM) | A2 peptide | A2 native | A2 in vivo |
|------------------|----|--------------|-------------|------------------|-----------|-----------|-----------|-----------|-----------|----------------------------|------------|-----------|------------|
| 58577<br>1419.27 | 11 | FLTLSVTWIGV  | PSA.3.V11   |                  | 6.8       | 3.0       | 18        | 65        | 113       | 5                          | 3/3        | 3/3       |            |
| 6848<br>1419.11  | 11 | VLVHPQWVLTIV | PSA.49.V11  | HuK2.53.V11      | 11        | 1.6       | 16        | 31        | 9378      | 4                          |            |           |            |
|                  | 11 | DLMLRLSEPV   | PSA.116.V11 | HuK2.120.V11     | 50        | 57        | 29        | 148       | 2759      | 4                          |            |           |            |
| 1419.02          | 9  | MLLRLSEPA    | PSA.118     | HuK2.122         | 195       | 745       | 145       | 49        | --        | 3                          |            |           |            |
| 1389.10          | 9  | MLLRLSEPV    | PSA.118.V9  | HuK2.122.V9      | 36        | 36        | 46        | 638       | 421       | 3                          | 3/3        | 1/3       |            |
| 1419.01          | 8  | ALGTTTCYA    | PSA.143     | PSA.143          | 15        | 19        | 13        | 562       | --        | 3                          |            |           |            |
| 1389.14          | 8  | ALGTTTCYV    | PSA.143.V8  | HuK2.147.V8      | 74        | 6.4       | 12        | 264       | --        | 3                          | 2/3        | 1/3       |            |
| 1098.02          | 10 | FLTPKKLQCV   | PSA.161     |                  | 52        | 8.3       | 13        | 755       | --        | 3                          | 3/4        |           | 0/6        |
| 990.01           | 9  | KLQCVDLHV    | PSA.166     |                  | 79        | 205       | 91        | 6167      | --        | 2                          | 1/2        |           | 1/3        |
| 1419.24          | 10 | KLQCVDLHVV   | PSA.166.V10 |                  | 13        | 84        | 9.5       | 502       | --        | 3                          | 1/2        | 1/2       |            |
| 68567<br>1419.17 | 11 | PLVNGVLQGV   | PSA.212.V11 | HuK2.216.V11     | 27        | 127       | 19        | 255       | 4314      | 3                          |            |           |            |

Table XXIV Immunogenicity of A2 cross-reactive binding peptides and peptide analogs

| Peptide | ID | AA          | Sequence     | Source      | Alternate Source | A*0201 nM | A*0202 nM | A*0203 nM | A*0206 nM | A*6802 nM | Cross- Reactivity (<200nM) | A2 peptide | A2 native | A2 in vivo |
|---------|----|-------------|--------------|-------------|------------------|-----------|-----------|-----------|-----------|-----------|----------------------------|------------|-----------|------------|
| 1418.13 | 9  | LLLSIALSV   | HuK2.4.L2    |             |                  | 88        | 176       | 147       | 189       | --        | 4                          | 2/2        | 2/2       |            |
| 1419.05 | 10 | ALSVGCTGAV  | HuK2.9       |             |                  | 53        | 75        | 17        | 542       | --        | 3                          |            |           |            |
| 1419.11 | 11 | VLVHPQWVLTV | HuK2.53.V11  | PSA.49.V11  |                  | 11        | 1.6       | 16        | 31        | 9378      | 4                          | 2/2        | 2/2       |            |
| 1419.13 | 11 | DLMLRLSEPV  | HuK2.120.V11 | PSA.116.V11 |                  | 50        | 57        | 29        | 148       | 2759      | 4                          | 2/2        | 2/2       |            |
| 1419.02 | 9  | MLLRLSEPA   | HuK2.122     | PSA.118     |                  | 195       | 745       | 145       | 49        | --        | 3                          |            |           |            |
| 1389.10 | 9  | MLLRLSEPV   | HuK2.122.V9  | PSA.118.V9  |                  | 36        | 36        | 46        | 638       | 421       | 3                          |            |           |            |
| 1419.01 | 8  | ALGTTCTYA   | HuK2.147     | PSA.143     |                  | 15        | 19        | 13        | 562       | --        | 3                          | 1/2        |           |            |
| 1389.14 | 8  | ALGTTCTYV   | HuK2.147.V8  | PSA.143.V8  |                  | 74        | 6.4       | 12        | 264       | --        | 3                          |            |           |            |
| 1419.07 | 10 | FLRPRSLQCV  | HuK2.165     |             |                  | 186       | 4.8       | 4         | --        | --        | 3                          | 1/3        |           |            |
| 1419.14 | 11 | SLHLLSNDMCA | HuK2.175     |             |                  | 72        | 4.8       | 73        | --        | --        | 3                          | 1/3        |           |            |
| 1419.17 | 11 | PLVCNGVLQGV | HuK2.216.V11 | PSA.212.V11 |                  | 27        | 127       | 19        | 255       | 4314      | 3                          | 2/2        | 2/2       |            |

589  
410  
W0.  
6859

6869

**APPENDIX B**  
**SUBSTITUTE SHEETS**

Table IV. HLA Class I Standard Peptide Binding Affinity.

| ALLELE | STANDARD<br>PEPTIDE | SEQUENCE   | STANDARD<br>BINDING<br>AFFINITY (nM) | SEQ ID<br>NO: |
|--------|---------------------|------------|--------------------------------------|---------------|
| A*0101 | 944.02              | YLEPAIAKY  | 25                                   | 6699          |
| A*0201 | 941.01              | FLPSDYFPSV | 5.0                                  | 6700          |
| A*0202 | 941.01              | FLPSDYFPSV | 4.3                                  | 6700          |
| A*0203 | 941.01              | FLPSDYFPSV | 10                                   | 6700          |
| A*0205 | 941.01              | FLPSDYFPSV | 4.3                                  | 6700          |
| A*0206 | 941.01              | FLPSDYFPSV | 3.7                                  | 6700          |
| A*0207 | 941.01              | FLPSDYFPSV | 23                                   | 6700          |
| A*6802 | 1141.02             | FTQAGYPAL  | 40                                   | 6701          |
| A*0301 | 941.12              | KVFPYALINK | 11                                   | 6702          |
| A*1101 | 940.06              | AVDLYHFLK  | 6.0                                  | 6703          |
| A*3101 | 941.12              | KVFPYALINK | 18                                   | 6702          |
| A*3301 | 1083.02             | STLPETYVVR | 29                                   | 6704          |
| A*6801 | 941.12              | KVFPYALINK | 8.0                                  | 6702          |
| A*2401 | 979.02              | AYIDNYNKF  | 12                                   | 6705          |
| B*0702 | 1075.23             | APRTLVL    | 5.5                                  | 6706          |
| B*3501 | 1021.05             | FPFKYAAAF  | 7.2                                  | 6707          |
| B51    | 1021.05             | FPFKYAAAF  | 5.5                                  | 6707          |
| B*5301 | 1021.05             | FPFKYAAAF  | 9.3                                  | 6707          |
| B*5401 | 1021.05             | FPFKYAAAF  | 10                                   | 6707          |



Table V. HLA Class II Standard Peptide Binding Affinity.

| Allele    | Nomenclature    | Standard Peptide | Sequence                     | Binding Affinity (nM) | SEQ ID NO: |
|-----------|-----------------|------------------|------------------------------|-----------------------|------------|
| DRB1*0101 | DR1             | 515.01           | PKYVKQNTLKLAT                | 5.0                   | 6708       |
| DRB1*0301 | DR3             | 829.02           | YKTIAFDEEARR                 | 300                   | 6709       |
| DRB1*0401 | DR4w4           | 515.01           | PKYVKQNTLKLAT                | 45                    | 6708       |
| DRB1*0404 | DR4w14          | 717.01           | YARFQSQTTLKQKT               | 50                    | 6710       |
| DRB1*0405 | DR4w15          | 717.01           | YARFQSQTTLKQKT               | 38                    | 6710       |
| DRB1*0701 | DR7             | 553.01           | QYIKANSKFIGITE               | 25                    | 6711       |
| DRB1*0802 | DR8w2           | 553.01           | QYIKANSKFIGITE               | 49                    | 6711       |
| DRB1*0803 | DR8w3           | 553.01           | QYIKANSKFIGITE               | 1600                  | 6711       |
| DRB1*0901 | DR9             | 553.01           | QYIKANSKFIGITE               | 75                    | 6711       |
| DRB1*1101 | DR5w11          | 553.01           | QYIKANSKFIGITE               | 20                    | 6711       |
| DRB1*1201 | DR5w12          | 1200.05          | EALIHQLKINPYVLS              | 298                   | 6712       |
| DRB1*1302 | DR6w19          | 650.22           | QYIKANAKFIGITE               | 3.5                   | 6713       |
| DRB1*1501 | DR2w2 $\beta$ 1 | 507.02           | GRTQDENPVVHFFKNIV<br>TPRTPPP | 9.1                   | 6714       |
| DRB3*0101 | DR52a           | 511              | NGQIGNDPNRDIL                | 470                   | 6715       |
| DRB4*0101 | DRw53           | 717.01           | YARFQSQTTLKQKT               | 58                    | 6710       |
| DRB5*0101 | DR2w2 $\beta$ 2 | 553.01           | QYIKANSKFIGITE               | 20                    | 6711       |

Table XXII. Prostate Antigen Peptides

| Antigen<br>Binding affinity<br>$\leq 200\text{nM}$ | Sequence    | SEQ ID<br>NO.: |
|----------------------------------------------------|-------------|----------------|
| PSA.117                                            | LMLLRLSEPA  | 6870           |
| PSA.118                                            | MLLRLSEPAEL | 6871           |
| PSA.118                                            | MLLRLSEPA   | 6872           |
| PSA.143                                            | ALGTTCYA    | 6873           |
| PSA.161                                            | FLTPKKLQCV  | 6874           |
| PSA.166                                            | KLQCVDLHV   | 6875           |
| PAP.6                                              | LLLARAASLSL | 6876           |
| PAP.21                                             | LLFFWLDRSV  | 6877           |
| PAP.30                                             | VLAKELKFV   | 6878           |
| PAP.92                                             | FLNESYKHEQV | 6879           |
| PAP.112                                            | TLMSAMTNL   | 6880           |
| PAP.135                                            | ILLWQPIPV   | 6881           |
| PAP.284                                            | IMYSAHDTTV  | 6882           |
| PAP.299                                            | ALDVYNGLL   | 6883           |
| PSM.26                                             | LVLAGGFFL   | 6884           |
| PSM.27                                             | VLAGGFFLL   | 6885           |
| PSM.168                                            | GMPEGDLVYV  | 6886           |
| PSM.288                                            | GLPSIPVHPI  | 6887           |
| PSM.441                                            | LLQERGVAYI  | 6888           |
| PSM.469                                            | LMYSLVHNL   | 6889           |
| PSM.662                                            | RMMNDQLMFL  | 6890           |
| PSM.663                                            | MMNDQLMFL   | 6891           |
| PSM.667                                            | QLMFLERAFL  | 6892           |
| PSM.711                                            | ALFDIESKV   | 6893           |
| HuK2.165                                           | FLRPRSLQCV  | 6894           |
| HuK2.175                                           | SLHLLSNDMCA | 6895           |
| Binding affinity<br>$>200\text{nM}$                | Sequence    |                |
| PSM.4                                              | LLHETDSAV   | 6896           |
| PSM.25                                             | ALVLAGGFFL  | 6897           |
| PSM.427                                            | GLLGSTEW    | 6898           |
| PSM.514                                            | KLGSNDFEV   | 6899           |

Table XXIII A supermotif cross-reactive binding data

| SEQ ID NO.: | Peptide  | AA | Sequence    | Source      | A*0201<br>nM | A*0202<br>nM | A*0203<br>nM | A*0206<br>nM | A*6802<br>nM | A2 Cross-<br>Reactivity |
|-------------|----------|----|-------------|-------------|--------------|--------------|--------------|--------------|--------------|-------------------------|
| 6716        | 20.0044  | 9  | LLARAASL    | PAP.6       | 208          | 13           | 29           | 425          | --           | 4                       |
| 6717        | 63.0136  | 11 | LLARAASLSL  | PAP.6       | 8.1          | 3.1          | 5.3          | 80           | 143          | 5                       |
| 6718        | 60.0201  | 9  | LLARAASV    | PAP.6.V9    | 18           | 215          | 6.7          | 95           | --           | 4                       |
| 6719        | 20.0203  | 10 | LLARAASLSL  | PAP.7       | 500          | 5.2          | 63           | 9250         | 5714         | 3                       |
| 6720        | 63.0031  | 10 | LLARAASLSV  | PAP.7.V10   | 109          | 10           | 21           | 378          | 727          | 4                       |
| 6721        | 63.0137  | 11 | AASLSGLFL   | PAP.11      | 227          | 23           | 53           | 95           | --           | 4                       |
| 6722        | 1419.51  | 10 | SLSLGLFL    | PAP.13      | 40           | 13           | 403          | 21           | 8560         | 4                       |
| 6723        | 1419.52  | 10 | SLSLGLFLV   | PAP.13.V10  | 1.8          | 3.9          | 17           | 42           | 355          | 5                       |
| 6724        | 1419.50  | 9  | SLSLGLFV    | PAP.13.V9   | 77           | 25           | 21           | 93           | --           | 4                       |
| 6725        | 60.0203  | 9  | FLFLFFV     | PAP.18.V9   | 42           | 307          | 625          | 308          | 90           | 4                       |
| 6726        | 63.0138  | 11 | FLFFWLDRSV  | PAP.20      | 14           | 17           | 2.8          | 285          | 364          | 5                       |
| 6727        | 1097.09  | 10 | LLFFWLDRSV  | PAP.21      | 28           | 0.60         | 1.6          | 231          | --           | 4                       |
| 6728        | 1418.23  | 10 | LTFFWLDRSV  | PAP.21.T2   | 118          | 11           | 9.6          | 43           | 16           | 5                       |
| 6729        | 63.0139  | 11 | LLFFWLDRSVL | PAP.21      | 65           | 2.9          | 2.7          | 822          | 4444         | 3                       |
| 6730        | 63.0033  | 10 | SLLAKELFV   | PAP.29.L2   | 64           | 5.7          | 3.8          | 38           | 6667         | 4                       |
| 6731        | 1097.171 | 9  | VLAKELFV    | PAP.30      | 96           | 3.6          | 6.7          | 168          | --           | 4                       |
| 6732        | 63.0142  | 11 | VLAKELKFVTL | PAP.30      | 6.9          | 8.1          | 21           | 25           | --           | 4                       |
| 6733        | 63.0034  | 10 | VLAKELKFV   | PAP.30.V10  | 31           | 12           | 189          | 86           | 2286         | 4                       |
| 6734        | 1419.55  | 11 | FLNESYKHEQV | PAP.92      | 29           | 1.4          | 5.6          | 381          | 6154         | 4                       |
| 6735        | 1177.01  | 9  | TLMSAMTNL   | PAP.112     | 43           | 0.80         | 2.9          | 285          | 296          | 5                       |
| 6736        | 20.0312  | 10 | TLMSAMTNLA  | PAP.112     | 385          | 3.6          | 37           | 3700         | 6667         | 3                       |
| 6737        | 63.0037  | 10 | TLMSAMTNLV  | PAP.112.V10 | 63           | 3.9          | 12           | 43           | 242          | 5                       |
| 6738        | 1419.56  | 9  | TLMSAMTNV   | PAP.112.V9  | 10           | 2.4          | 3.6          | 54           | 62           | 5                       |
| 6739        | 1419.58  | 10 | LLALFPPEGV  | PAP.120.L2  | 5.0          | 0.70         | 1.6          | 148          | 163          | 5                       |

-- indicates binding affinity &gt; 10,000nM.

Table XXIIIA supermotif cross-reactive binding data

| SEQ ID NO.: | Peptide | AA | Sequence    | Source      | A*0201 nM | A*0202 nM | A*0203 nM | A*0206 nM | A*6802 nM | A2 Cross-Reactivity |
|-------------|---------|----|-------------|-------------|-----------|-----------|-----------|-----------|-----------|---------------------|
| 6740        | 1419.59 | 10 | LVALFPPEGV  | PAP.120.V2  | 156       | 17        | 4.8       | 463       | 28        | 5                   |
| 6741        | 1419.6  | 10 | ALFPPEGVSI  | PAP.122     | 278       | 11        | 133       | 2643      | --        | 3                   |
| 6742        | 1419.61 | 10 | ALFPPEGVSV  | PAP.122.V10 | 15        | 1.0       | 18        | 119       | 4444      | 4                   |
| 6743        | 63.0041 | 10 | GVSINWNPILV | PAP.128.V10 | 250       | 94        | 23        | 451       | 2286      | 4                   |
| 6744        | 60.0207 | 9  | GVSINWNPIV  | PAP.128.V9  | 455       | 269       | 909       | 308       | --        | 3                   |
| 6745        | 63.0042 | 10 | PLLLWQPIPV  | PAP.134.L2  | 238       | 47        | 19        | 336       | 3333      | 4                   |
| 6746        | 1044.04 | 9  | ILLWQPIPV   | PAP.135     | 3.3       | 39        | 1.8       | 71        | 1702      | 4                   |
| 6747        | 1418.25 | 9  | ITLWQPIPV   | PAP.135.T2  | 34        | 1720      | 6.2       | 26        | 32        | 4                   |
| 6748        | 1419.69 | 10 | LLWQPIPVHV  | PAP.136.V10 | 25        | 1.8       | 17        | 287       | 60        | 5                   |
| 6749        | 1166.11 | 10 | GLHGQDLFGI  | PAP.196     | 26        | 0.90      | 2.5       | 315       | --        | 4                   |
| 6750        | 1419.62 | 10 | GLHGQDLFGV  | PAP.196.V10 | 12        | 2.3       | 3.1       | 18        | --        | 4                   |
| 6751        | 63.0048 | 10 | KLRELSELSV  | PAP.234.V10 | 263       | 9.1       | 7.1       | 49        | 1818      | 4                   |
| 6752        | 1097.05 | 10 | IMYSAHDTTV  | PAP.284     | 217       | 1.5       | 14        | 411       | --        | 4                   |
| 6753        | 1389.06 | 10 | ILYSAHDTTV  | PAP.284.L2  | 385       | 1.0       | 15        | 1480      | 5714      | 3                   |
| 6754        | 60.0213 | 9  | TVSGLQMAV   | PAP.292.V9  | 294       | 12        | 122       | 195       | 5.7       | 5                   |
| 6755        | 1177.02 | 9  | ALDVYNGLL   | PAP.299     | 73        | 29        | 256       | 3083      | --        | 3                   |
| 6756        | 1419.64 | 10 | LLPPYASCHV  | PAP.306.V10 | 88        | 15        | 16        | 98        | 5260      | 4                   |

-- indicates binding affinity &gt;10,000nM.

Table XXIIIIB A2 supermotif cross-reactive binding data

| SEQ ID NO.: | Peptide | Alternate Peptide Number | AA | Sequence   | Source      | A*0201 nM | A*0202 nM | A*0203 nM | A*0206 nM | A*6802 nM | A2 Cross-Reactivity |
|-------------|---------|--------------------------|----|------------|-------------|-----------|-----------|-----------|-----------|-----------|---------------------|
| 6757        | 1126.10 |                          | 9  | VLAGGFFLL  | PSM.27      | 39        | 0.20      | 33        | 31        | 2857      | 4                   |
| 6758        | 1389.20 |                          | 9  | VLAGGFFLV  | PSM.27.V9   | 26        | 0.40      | 5.0       | 57        | 216       | 5                   |
| 6759        | 1129.04 |                          | 10 | GMPEGDLVYV | PSM.168     | 55        | 3.1       | 7.1       | 161       | 6154      | 4                   |
| 6760        | 1389.22 |                          | 10 | GLPEGDLVYV | PSM.168.L2  | 42        | 2.0       | 2.1       | 112       | 964       | 4                   |
| 6761        | 1418.29 |                          | 10 | GTPEGDLVYV | PSM.168.T2  | 313       | 134       | 53        | 40        | 571       | 4                   |
| 6762        | 1129.10 |                          | 10 | GLPSIPVHPI | PSM.288     | 147       | 2.7       | 2.1       | 2467      | 308       | 4                   |
| 6763        | 1389.24 |                          | 10 | GLPSIPVHPV | PSM.288.V10 | 55        | 0.70      | 0.60      | 308       | 121       | 5                   |
| 6764        | 1129.01 |                          | 10 | LLQERGVAYI | PSM.441     | 179       | 5.7       | 6.7       | 861       | --        | 3                   |
| 6765        | 1126.14 |                          | 9  | LMYSLVHNL  | PSM.469     | 64        | 0.40      | 2.1       | 109       | 320       | 5                   |
| 6766        | 1126.06 |                          | 10 | RMNDQLMFL  | PSM.662     | 9.8       | 2.7       | 7.7       | 40        | --        | 4                   |
| 6767        | 1126.01 |                          | 9  | MMNDQLMFL  | PSM.663     | 11        | 0.80      | 1.7       | 7.6       | 195       | 5                   |
| 6768        | 1126.16 |                          | 10 | QLMFLERAFI | PSM.667     | 98        | 36        | 91        | --        | 30        | 4                   |
| 6769        | 1129.08 |                          | 9  | ALFDIESKV  | PSM.711     | 85        | 0.70      | 1.4       | 148       | 8889      | 4                   |
| 6770        | 1418.30 |                          | 9  | ATFDIESKV  | PSM.711.T2  | 238       | 27        | 44        | 82        | 258       | 5                   |

-- indicates binding affinity &gt;10,000nM.

Table XXIIIC A2 supermotif cross-reactive binding data

| SEQ ID NO.: | Peptide | AA | Sequence    | Source      | Alternate Source | A*0201 nM | A*0202 nM | A*0203 nM | A*0206 nM | A*6802 nM | A2 Cross-Reactivity |
|-------------|---------|----|-------------|-------------|------------------|-----------|-----------|-----------|-----------|-----------|---------------------|
| 6771        | 1419.25 | 11 | VVFLTLSTWI  | PSA.1       |                  | 385       | 159       | 63        | 2846      | --        | 3                   |
| 6772        | 63.0185 | 11 | VVFLTLSTWV  | PSA.1.V11   |                  | 89        | 88        | 71        | 336       | --        | 4                   |
| 6773        | 63.0186 | 11 | FLTLSTWIGV  | PSA.3.V11   |                  | 6.8       | 3.0       | 18        | 65        | 114       | 5                   |
| 6774        | 60.0216 | 9  | FLTLSTWV    | PSA.3.V9    |                  | 53        | 8.4       | 8.3       | 49        | --        | 4                   |
| 6775        | 60.0217 | 9  | TLSTWIGV    | PSA.5.V9    |                  | 26        | 4.9       | 40        | 712       | 229       | 4                   |
| 6776        | 1419.10 | 11 | VLVHPQWVLT  | PSA.49      | HuK2.53          | 294       | 7.7       | 101       | 2056      | --        | 3                   |
| 6777        | 1419.11 | 11 | VLVHPQWVLT  | PSA.49.V11  | HuK2.53.V11      | 11        | 1.5       | 16        | 31        | 8889      | 4                   |
| 6778        | 63.0109 | 11 | DLMLRLSEPV  | PSA.116.V11 | HuK2.120.V11     | 50        | 57        | 29        | 148       | 2759      | 4                   |
| 6779        | 63.0014 | 10 | MLLRLSEPA   | PSA.117     | HuK2.121         | 200       | 17        | 67        | 925       | 5000      | 3                   |
| 6780        | 1418.43 | 10 | MLLRLSEPV   | PSA.117.V10 | HuK2.121.V10     | 114       | 67        | 29        | 25        | 6154      | 4                   |
| 6781        | 1419.02 | 9  | MLLRLSEPA   | PSA.118     | HuK2.122         | 195       | 745       | 145       | 49        | --        | 3                   |
| 6782        | 1389.10 | 9  | MLLRLSEPV   | PSA.118.V9  | HuK2.122.V9      | 36        | 36        | 46        | 638       | 421       | 4                   |
| 6783        | 1389.12 | 11 | MLLRLSEPAEV | PSA.118.V11 |                  | 294       | 331       | 115       | 1762      | 4444      | 3                   |
| 6784        | 1419.01 | 8  | ALGTTICYA   | PSA.143     | HuK2.147         | 15        | 19        | 13        | 561       | --        | 3                   |
| 6785        | 1389.14 | 8  | ALGTTICVY   | PSA.143.V8  | HuK2.147.V8      | 74        | 6.4       | 12        | 264       | --        | 4                   |
| 6786        | 1098.02 | 10 | FLTPKKLQCV  | PSA.161     |                  | 52        | 8.3       | 13        | 755       | --        | 3                   |
| 6787        | 990.01  | 9  | KLQCVDLHV   | PSA.166     |                  | 79        | 205       | 91        | 6167      | --        | 3                   |
| 6788        | 63.0058 | 10 | KLQCVDLHVV  | PSA.166.V10 |                  | 13        | 84        | 9.1       | 500       | --        | 4                   |
| 6789        | 60.0220 | 9  | KVTKFMLCV   | PSA.187.V9  |                  | 69        | 518       | 53        | 128       | --        | 3                   |
| 6790        | 1419.17 | 11 | PLVCNGVLQGV | PSA.212.V11 | HuK2.216.V11     | 27        | 127       | 19        | 255       | 4314      | 4                   |
| 6791        | 1418.55 | 10 | LVCNGVLQGV  | PSA.213.V10 | HuK2.217.V10     | 10        | 2.9       | 12        | 5.6       | 3.5       | 5                   |

-- indicates binding affinity &gt; 10,000nM.

Table XXIIID A2 supermotif cross-reactive binding data

| SEQ ID<br>NO.: | Peptide | AA | Sequence    | Source       | Alternate<br>Source | A*0201<br>nM | A*0202<br>nM | A*0203<br>nM | A*0206<br>nM | A*6802<br>nM | A2 Cross-<br>Reactivity |
|----------------|---------|----|-------------|--------------|---------------------|--------------|--------------|--------------|--------------|--------------|-------------------------|
| 6792           | 1418.13 | 9  | LLLSIALSV   | HuK2.4.L2    |                     | 88           | 176          | 147          | 189          | --           | 4                       |
| 6793           | 1418.57 | 11 | ILLSVGCTGAV | HuK2.8.L2    |                     | 36           | 33           | 36           | 308          | --           | 4                       |
| 6794           | 1418.59 | 11 | ITLSVGCTGAV | HuK2.8.T2    |                     | 294          | 134          | 40           | 206          | 121          | 5                       |
| 6795           | 1419.05 | 10 | ALSVGCTGAV  | HuK2.9       |                     | 53           | 75           | 17           | 542          | --           | 3                       |
| 6796           | 1418.15 | 9  | ALSVGCTGV   | HuK2.9.V9    |                     | 24           | 17           | 9.1          | 264          | --           | 4                       |
| 6797           | 1418.35 | 10 | SVGCTGAVPV  | HuK2.11.V10  |                     | 104          | 287          | 154          | 552          | 216          | 4                       |
| 6798           | 1419.10 | 11 | VLVHPQWVLTA | HuK2.53      | PSA.49              | 294          | 7.7          | 101          | 2056         | --           | 3                       |
| 6799           | 1419.11 | 11 | VLVHPQWVLTV | HuK2.53.V11  | PSA.49.V11          | 11           | 1.6          | 16           | 31           | 9378         | 4                       |
| 6800           | 63.0109 | 11 | DLMLRLSEPV  | HuK2.120.V11 | PSA.116.V11         | 50           | 57           | 29           | 148          | 2759         | 4                       |
| 6801           | 63.0014 | 10 | LMLRLSEPA   | HuK2.121     | PSA.117             | 200          | 17           | 67           | 925          | 5000         | 3                       |
| 6802           | 1418.43 | 10 | LMLRLSEPV   | HuK2.121.V10 | PSA.117.V10         | 114          | 67           | 29           | 25           | 6154         | 4                       |
| 6803           | 1419.02 | 9  | MLRLSEPA    | HuK2.122     | PSA.118             | 195          | 745          | 145          | 49           | --           | 3                       |
| 6804           | 1389.10 | 9  | MLRLSEPV    | HuK2.122.V9  | PSA.118.V9          | 36           | 36           | 46           | 638          | 421          | 4                       |
| 6805           | 1419.01 | 8  | ALGTTCTYA   | HuK2.147     | PSA.143             | 15           | 19           | 13           | 561          | --           | 3                       |
| 6806           | 1389.14 | 8  | ALGTTCTYV   | HuK2.147.V8  | PSA.143.V8          | 74           | 6.4          | 12           | 264          | --           | 4                       |
| 6807           | 1419.07 | 10 | FLRPRSLQCV  | HuK2.165     |                     | 186          | 4.8          | 4.2          | --           | --           | 3                       |
| 6808           | 60.0191 | 9  | SLQCVSLHL   | HuK2.170     |                     | 500          | 51           | 417          | 6167         | 2581         | 3                       |
| 6809           | 1419.66 | 10 | SLQCVSLHLL  | HuK2.170     |                     | 263          | 4.9          | 71           | 446          | 5000         | 4                       |
| 6810           | 1418.52 | 10 | SLQCVSLHLV  | HuK2.170.V10 |                     | 13           | 6.3          | 2.8          | 5.2          | 205          | 5                       |
| 6811           | 1418.19 | 9  | SLQCVSLHV   | HuK2.170.V9  |                     | 56           | 165          | 48           | 4111         | 1600         | 3                       |
| 6812           | 1419.14 | 11 | SLHLLSNDMCA | HuK2.175     |                     | 71           | 4.8          | 71           | --           | --           | 3                       |
| 6813           | 1418.66 | 11 | SLHLLSNDMCV | HuK2.175.V11 |                     | 8.6          | 0.80         | 10           | 2313         | 2162         | 3                       |
| 6814           | 1419.15 | 11 | HLLSNDMCARA | HuK2.177     |                     | 417          | 391          | 250          | 374          | --           | 4                       |
| 6815           | 1418.67 | 11 | HLLSNDMCARV | HuK2.177.V11 |                     | 26           | 1.3          | 5.3          | 37           | 860          | 4                       |
| 6816           | 1418.20 | 9  | HLLSNDMCV   | HuK2.177.V9  |                     | 119          | 102          | 278          | 176          | --           | 4                       |

-- indicates binding affinity &gt;10,000nM.

Table XXIIID A2 supermotif cross-reactive binding data

| SEQ ID NO.: | Peptide | AA | Sequence    | Source       | Alternate Source | A*0201 nM | A*0202 nM | A*0203 nM | A*0206 nM | A*6802 nM | A2 Cross-Reactivity |
|-------------|---------|----|-------------|--------------|------------------|-----------|-----------|-----------|-----------|-----------|---------------------|
| 6817        | 1418.53 | 10 | LLSNDMCARV  | HuK2.178.V10 |                  | 5.3       | 0.70      | 4.3       | 10        | 1702      | 4                   |
| 6818        | 1418.71 | 11 | KVTEFMLCAGV | HuK2.191.V11 |                  | 56        | 10        | 26        | 29        | 143       | 5                   |
| 6819        | 1418.21 | 9  | KVTEFMLCV   | HuK2.191.V9  |                  | 53        | 27        | 31        | 34        | 6667      | 4                   |
| 6820        | 1418.22 | 9  | FMLCAGLVV   | HuK2.195.V9  |                  | 29        | 12        | 91        | 51        | --        | 4                   |
| 6821        | 1419.17 | 11 | PLVNGVQLQGV | HuK2.216.V11 | PSA.212.V11      | 27        | 127       | 19        | 255       | 4314      | 4                   |
| 6822        | 1418.55 | 10 | LVCNGVQLQGV | HuK2.217.V10 | PSA.213.V11      | 10        | 2.9       | 12        | 5.6       | 3.5       | 5                   |

-- indicates binding affinity &gt;10,000nM.



Table XXIVA Immunogenicity of A2 cross-reactive binding peptides and peptide analogs

| SEQ ID NO.: | Peptide ID | AA | Sequence   | Source      | A*0201 nM | A*0202 nM | A*0203 nM | A*0206 nM | A*6802 nM | Cross-Reactivity (<200nM) | A2 peptide | A2 native | A2 in vivo |
|-------------|------------|----|------------|-------------|-----------|-----------|-----------|-----------|-----------|---------------------------|------------|-----------|------------|
| 6823        | 1419.51    | 10 | SLSLGFLFL  | PAP.13      | 40        | 13        | 403       | 21        | 8560      | 3                         |            |           |            |
| 6824        | 1419.52    | 10 | SLSLGFLFLV | PAP.13.V10  | 1.8       | 3.9       | 17        | 42        | 355       | 4                         |            |           |            |
| 6825        | 1097.094   | 10 | LFFWLDRSV  | PAP.21      | 28        | 0.60      | 1.6       | 231       | --        | 3                         | 3/3        |           | 0/3        |
| 6826        | 1418.23    | 10 | LTFWLDRSV  | PAP.21.T2   | 118       | 11        | 9.6       | 43        | 16        | 5                         | 3/3        | 2/3       |            |
| 6827        | 1097.171   | 9  | VLAKELKFV  | PAP.30      | 96        | 3.6       | 6.7       | 168       | --        | 4                         | 1/3        |           | 0/3        |
| 6828        | 1177.01    | 9  | TLMSAMTNL  | PAP.112     | 43        | 0.80      | 2.9       | 285       | 296       | 3                         | 2/2        |           | 3/3        |
| 6829        | 1419.58    | 10 | LLALFPEGV  | PAP.120.L2  | 5.0       | 0.72      | 1.6       | 146       | 164       | 5                         |            |           |            |
| 6830        | 1419.61    | 10 | ALFPEGVSV  | PAP.122.V10 | 15        | 1.0       | 18        | 120       | 4387      | 4                         | 1/3        | 1/3       |            |
| 6831        | 1044.041   | 9  | ILLWQPIPV  | PAP.135     | 3.3       | 39        | 1.8       | 71        | 8511      | 4                         | 5/5        |           | 1/6        |
| 6832        | 1418.25    | 9  | ITLWQPIPV  | PAP.135.T2  | 34        | 1723      | 6.2       | 26        | 32        | 4                         | 3/3        | 2/3       |            |
| 6833        | 1419.69    | 10 | LLWQPIPVHV | PAP.136.V10 | 25        | 1.8       | 17        | 287       | 60        | 4                         |            |           |            |
| 6834        | 1166.11    | 10 | GLHGQDLFGI | PAP.196     | 26        | 0.9       | 2.5       | 315       | --        | 3                         |            |           |            |
| 6835        | 1419.62    | 10 | GLHGQDLFGV | PAP.196.V10 | 12        | 2.3       | 3.2       | 18        | --        | 4                         |            |           |            |
| 6836        | 1097.052   | 10 | IMYSAHDTTV | PAP.284     | 217       | 1.5       | 14        | 411       | --        | 2                         | 3/3        |           | 0/3        |
| 6837        | 1419.64    | 10 | LLPPYASCHV | PAP.306.V10 | 88        | 15        | 16        | 98        | 5260      | 4                         |            |           |            |

Table XXIVB Immunogenicity of A2 cross-reactive binding peptide and peptide analogs

| SEQ ID NO.: | Peptide | AA | Sequence    | Source      | A*0201 nM | A*0202 nM | A*0203 nM | A*0206 nM | A*6802 nM | Cross-Reactivity ( $\leq 200$ nM) | A2 peptide | A2 native | A2 in vivo |
|-------------|---------|----|-------------|-------------|-----------|-----------|-----------|-----------|-----------|-----------------------------------|------------|-----------|------------|
| 6838        | 1126.10 | 9  | VLAGGFFLL   | PSM.27      | 39        | 0.20      | 33        | 31        | --        | 4                                 | 1/2        |           | 3/3        |
| 6839        | 1389.20 | 9  | VLAGGFFLV   | PSM.27.V9   | 26        | 0.40      | 5.0       | 57        | 216       | 4                                 | 1/2        | 1/2       |            |
| 6840        | 1129.04 | 10 | GMPEGDLYVY  | PSM.168     | 55        | 3.1       | 7.1       | 161       | --        | 4                                 | 0/1        |           | 1/3        |
| 6841        | 1129.10 | 10 | GLPSIPVHPI  | PSM.288     | 147       | 2.7       | 2.1       | 2467      | 1538      | 3                                 | 2/4        |           | 0/3        |
| 6842        | 1389.24 | 10 | GLPSIPVHPV  | PSM.288.V10 | 55        | 0.70      | 0.60      | 308       | 121       | 4                                 | 4/4        | 3/4       |            |
| 6843        | 1129.01 | 10 | LLQERGVA YI | PSM.441     | 179       | 5.7       | 6.7       | 861       | --        | 3                                 | 3/3        |           |            |
| 6844        | 1126.14 | 9  | LMYSLVHNL   | PSM.469     | 64        | 0.40      | 2.1       | 109       | 1600      | 4                                 | 3/3        |           | 3/3        |
| 6845        | 1126.06 | 10 | RMMNDQLMFL  | PSM.662     | 9.8       | 2.7       | 7.7       | 40        | --        | 4                                 | 1/1        |           | 20/22      |
| 6846        | 1126.01 | 9  | MMNDQLMFL   | PSM.663     | 11        | 0.80      | 1.7       | 7.6       | 976       | 4                                 | 2/2        |           | 3/3        |
| 6847        | 1129.08 | 9  | ALFDIESKV   | PSM.711     | 85        | 0.70      | 1.4       | 148       | --        | 4                                 | 2/2        |           | 3/3        |

Table XXIVC Immunogenicity of A2 cross-reactive binding peptide and peptide analogs

| SEQ ID NO.: | Peptide | AA | Sequence    | Source      | Alternate Source | A*0201 nM | A*0202 nM | A*0203 nM | A*0206 nM | A*6802 nM | Cross-Reactivity (<200nM) | A2 peptide | A2 native | A2 in vivo |
|-------------|---------|----|-------------|-------------|------------------|-----------|-----------|-----------|-----------|-----------|---------------------------|------------|-----------|------------|
| 6848        | 63.0186 | 11 | FLTSLVTWIGV | PSA.3.V11   |                  | 6.8       | 3.0       | 18        | 65        | 113       | 5                         | 3/3        | 3/3       | 3/3        |
| 6849        | 1419.11 | 11 | VLVHPQWVLTV | PSA.49.V11  | HuK2.53.V11      | 11        | 1.6       | 16        | 31        | 9378      | 4                         |            |           |            |
| 6850        | 63.0109 | 11 | DMLRLSEP    | PSA.116.V11 | HuK2.120.V1      | 50        | 57        | 29        | 148       | 2759      | 4                         |            |           |            |
| 6851        | 1419.02 | 9  | MLRLSEPA    | PSA.118     | HuK2.122         | 195       | 745       | 145       | 49        | --        | 3                         |            |           |            |
| 6852        | 1389.10 | 9  | MLRLSEP     | PSA.118.V9  | HuK2.122.V9      | 36        | 36        | 46        | 638       | 421       | 3                         | 3/3        | 1/3       |            |
| 6853        | 1419.01 | 8  | ALGTTCYA    | PSA.143     | PSA.143          | 15        | 19        | 13        | 562       | --        | 3                         |            |           |            |
| 6854        | 1389.14 | 8  | ALGTTCYV    | PSA.143.V8  | HuK2.147.V8      | 74        | 6.4       | 12        | 264       | --        | 3                         | 2/3        | 1/3       |            |
| 6855        | 1098.02 | 10 | FLTPKKLQCV  | PSA.161     |                  | 52        | 8.3       | 13        | 755       | --        | 3                         | 3/4        | 0/6       |            |
| 6856        | 990.01  | 9  | KLQCVDLHV   | PSA.166     |                  | 79        | 205       | 91        | 6167      | --        | 2                         | 1/2        | 1/3       |            |
| 6857        | 63.0058 | 10 | KLQCVDLHV   | PSA.166.V10 |                  | 13        | 84        | 9.5       | 502       | --        | 3                         | 1/2        | 1/2       |            |
| 6858        | 1419.17 | 11 | PLVCNGVLQGV | PSA.212.V11 | HuK2.216.V1      | 27        | 127       | 19        | 255       | 4314      | 3                         |            |           |            |

Table XXIV D Immunogenicity of A2 cross-reactive binding peptide and peptide analogs

| SEQ ID | Peptide | AA | Sequence    | Source       | Alternate Source | A*0201 nM | A*0202 nM | A*0203 nM | A*0206 nM | A*6802 nM | Cross-Reactivity (<200nM) | A2 peptide | A2 native | A2 in vivo |
|--------|---------|----|-------------|--------------|------------------|-----------|-----------|-----------|-----------|-----------|---------------------------|------------|-----------|------------|
| NO:    |         |    |             |              |                  |           |           |           |           |           |                           |            |           |            |
| 6859   | 1418.13 | 9  | LLLSIALSV   | HuK2.4.L2    |                  | 88        | 176       | 147       | 189       | --        | 4                         | 2/2        | 2/2       |            |
| 6860   | 1419.05 | 10 | ALSVGCTGAV  | HuK2.9       |                  | 53        | 75        | 17        | 542       | --        | 3                         |            |           |            |
| 6861   | 1419.11 | 11 | VLVHPQWVLT  | HuK2.53.V11  | PSA.49.V11       | 11        | 1.6       | 16        | 31        | 9378      | 4                         | 2/2        | 2/2       |            |
| 6862   | 63.0109 | 11 | DLMLRLRLSEP | HuK2.120.V11 | PSA.116.V11      | 50        | 57        | 29        | 148       | 2759      | 4                         | 2/2        | 2/2       |            |
| 6863   | 1419.02 | 9  | MLRLSEPA    | HuK2.122     | PSA.118          | 195       | 745       | 145       | 49        | --        | 3                         |            |           |            |
| 6864   | 1389.10 | 9  | MLRLSEP     | HuK2.122.V9  | PSA.118.V9       | 36        | 36        | 46        | 638       | 421       | 3                         |            |           |            |
| 6865   | 1419.01 | 8  | ALGTTCTYA   | HuK2.147     | PSA.143          | 15        | 19        | 13        | 562       | --        | 3                         | 1/2        |           |            |
| 6866   | 1389.14 | 8  | ALGTTCTYV   | HuK2.147.V8  | PSA.143.V8       | 74        | 6.4       | 12        | 264       | --        | 3                         |            |           |            |
| 6867   | 1419.07 | 10 | FLRPRSLQCV  | HuK2.165     |                  | 186       | 4.8       | 4         | --        | --        | 3                         | 1/3        |           |            |
| 6868   | 1419.14 | 11 | SLHLLSNDMCA | HuK2.175     |                  | 72        | 4.8       | 73        | --        | --        | 3                         | 1/3        |           |            |
| 6869   | 1419.17 | 11 | PLVCNGVLQGV | HuK2.216.V11 | PSA.212.V11      | 27        | 127       | 19        | 255       | 4314      | 3                         | 2/2        | 2/2       |            |